

Additions to the Flora of Mussoorie Hills

BY

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In the botanical literature the first mention of Mussoorie is found in Royle's *Ill. Bot. Himal.*, published in 1833-1840. U.N. Kanjilal (1928) in *Flora Chakrata* also mentions Mussoorie in giving the distribution of some species. Besides, notable contributions to the flora of Mussoorie have been attempted since 1909 when James Marten published a list of 314 species of flowering plants. Then Allen (1919) added 32 species and Watts (1954) published further records of 41 species, and estimated the number of plants that comprise the flora of Mussoorie as between 700-750 species. Recently Raizada (1959) published a list of plants occurring in Mussoorie, raising the number of species of Phanerogams, Ferns, and Fern Allies to 1331. The following is a further list of plants which are reported for the first time from the Mussoorie Hills. The area of collection is the same as was considered by Raizada (1959). Cultivated plants and plants found as escapes have not been included in the list, unless they have been found naturalized in the area.

RANUNCULACEAE

Clematis orientalis L.

Mossy Fall, in shady places. Fl. Aug.-Sept.

Ranunculus arvensis L.

Occasional weed of cultivation, below Bhatta-Dhobighat. *Saxena* 1677. Fl. Feb.-March. Fr. March-April.

Thalictrum javanicum Bl.

Common along waysides in shady places. Rajpur, Kamptee Fall, etc. *Saxena* 1226, 1301. Fl. July-Oct. Fr. Oct.-Nov.

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MENISPERMACEAE

Stephania glabra (Roxb.) Miers.

Rajpur 1000 m. along waysides in thickets and over shrubs. *Saxena* 1297, 2107. Fl. July-Aug. Fr. Aug.-Oct.

Loc. name: *Para* or *Parha*

BERBERIDACEAE

Mahonia acanthifolia G. Don.

Occasional in oak forests, 1700-2100 m. Kamptee Road, Masonic Lodge, Barlowganj, near Charleville, Koeti Kimoen Forest etc. *Saxena* 314, 2349. Fl. Feb.-April. Fr. May-June.

Loc. name: *Totar*

CRUCIFERAE

Arabidopsis thaliana (L.) Heyn.

Rajpur, along waysides in open dry places. *Saxena* 376. Fl. & Fr. Jan.-March.

Coronopus didymus (L.) Sm.

In open, somewhat moist spots at Kulri, Bhatta-Dhobighat etc. Along stream at Mossy Fall. *Saxena* 619, 755, 1556. Fl. & Fr. April-Dec.

Eruca sativa Gars.

Rajpur, up to 1050 m.—Occasional along waysides and in waste lands near settled areas. *Saxena* 226. Fl. Jan.-Feb.

Lepidium ruderales L.

Along waysides in waste lands and in fields, 915-2050 m. Rajpur, Bhatta-Dhobighat, Mall Road, Jabarkhet Road etc. *Saxena* 674, 753. Fl. May-June. Fr. July-Sept.

CAPPARIDACEAE

Capparis zeylanica L.

Occasional at Rajpur. *Saxena* 411. Fl. March-May. Fr. June-Sept.

Cleome viscosa L.

A weed in fields and along roadsides, 915-1500 m. Rajpur, Kamptee etc. *Saxena* 1973. Fl. June. Fr. July-early Oct.

Loc. name: *Jakhia*

FLACOURTIACEAE

Casearia tomentosa Roxb.

Frequent up to 1200 m. especially south of Mussoorie; Rajpur, Kutalgaon etc. Sometimes in sal forests. *Saxena* 408, 1732, 1758, 1902. Fl. March-April. Fr. May-July.

Loc. name: *Chilla*

PORTULACEAE

Portulaca oleracea L. subsp. **silvestris** (DC.) Thellung.

A common weed along roadsides at Rajpur; and in and along fields in moist spots at Arnigarh. *Saxena* 2810, 1989. Fl. June-Sept. Fr. Sept.-May.

MALVACEAE

Abelmoschus manihot (L.) Medic. var. **pungens** (Roxb.) Hochr.

Kamptee, scarce in open places. *Saxena* 2241, Fl. Sept.

Malva verticillata L. var. **chinensis** (Mill.)

Occasional along waysides at Kulri, Depot, near Jabarkhet etc. *Saxena* 970, 1353, 2049. Fl. & Fr. July-Sept.

The elongated pedicels and small flowers of this variety misled some authors to name it as *Malva parviflora*. The latter species has glabrous staminal tube and manifestly reticulate carpels with sharp edges.

Sida cordifolia L.

Occasional in open dry and often stony waste places at Rajpur, Kutal Gate, Kamptee Road etc. *Saxena* 1389, 2232. Fl. & Fr. Sept.-Nov.

TILIACEAE

Corchorus olitorius L.

A weed in *Arhar* field at Rajpur. *Saxena* 1316, 2224. Fl. Aug.-Sept. Fr. Sept.-Oct.

Grewia subinaequalis DC.

Occasional at Rajpur, both cultivated and wild. *Saxena* 1886, 1975, 2118. Fl. April-May. Fr. June-July.

Triumfetta pentandra A. Rich.

Fairly common in open or shady waste places at Rajpur, Kutal Village, Kamptee etc. *Saxena* 1038(A), 1191, 1329(A). Fl. & Fr. Aug.-Nov.

OXALIDACEAE

Biophytum reinwardtii (Zucc.) Klotz.

Occasional in open places at Rajpur and Kamptee. *Saxena* 1062. Fl. & Fr. Late Aug.-Sept.

RUTACEAE

Aegle marmelos (L.) Corr.

Cultivated and also apparently wild at Rajpur. *Saxena* 1977. Fl. June-July. Fr. June (next year).

VITACEAE

Parthenocissus semicordata (Wall.) Planch. var. **semicordata**.

Occasional in oak forest along Municipal Garden Road. *Saxena* D.D. No. 138679. Fl. June.

The var. *semicordata* (proper) differs from var. *roylei* in the hispid nature of the young branches, petioles, and nerves on the lower surface of the leaves.

Tetrastigma affine (Gagnep. ex Osmaston) Raizada & Saxena comb. nov *Vitis affinis* Gagnep. ex Osmaston, For. Fl. Kumaon 119, 1927.

A climber on rocks and in crevices; Jharipani (Oak Grove), Barlowganj, Bhatta Fall etc. *Saxena* 260, 1460, 1661. Fl. July-Sept. Fr. Oct.-March.

ANACARDIACEAE

Spondias pinnata (L.f.) Kurz.

Rare at Rajpur and up to 1100 m. on the Motor Road. *Saxena* 1926. Fl. March-April. Fr. June-Sept.

Loc. name: *Amara* or *Amra*

PAPILIONACEAE

Alysicarpus bupleurifolius (L.) DC. var. **bupleurifolius**.

Rajpur, occasional in open places. *Saxena* 2331. Fl. & Fr. Sept.

Atylosia volubilis (Blanco) Gamble.

Rajpur, occasional in sal forest. *Saxena* 1629. Fl. Feb.-March. Fr. March-April.

Crotalaria alata Buch -Ham. ex Roxb.

Rajpur, rare in sal forest. *Saxena* 2304. Fl. Aug.-Sept. Fr. Oct.

Crotalaria humifusa Grah. ex Benth.

Rare, on open grassy slopes at Kamptee Fall and Murray's Spring. *Saxena* 2255. Fl. Sept. Fr. Oct.-Nov.

Crotalaria medicaginea Lamk.

Occasional, in open places at Kamptee Fall. *Saxena* 1404, 2245. Fl. Aug.-Sept. Fr. Sept.-Oct.

Crotalaria mysorensis Roth.

Rare, in open places at Rajpur. *Saxena* 1446(B), 2208. Fl. Sept.-Oct. Fr. Oct.-Nov.

Crotalaria prostrata Rottl.

Occasional, near sal forest, Rajpur, usually in sheltered places. *Saxena* D.D. No. 138668. Fl. Late Aug.-Oct. Fr. Oct.-Nov.

Crotalaria tetragona Roxb.

Rare, in sal forest, Rajpur. *Saxena* 1771. Fl. Sept.-Nov. Fr. March-June.

Dalbergia sissoo Roxb. ex DC.

Frequent at Rajpur, ascending to 1400 m. on Rajpur- Mussoorie Motor Road. *Saxena* 396. Fl. March-May. Fr. Nov.-Feb.

Indigofera linifolia (L.f.) Retz.

Along waysides in open stony ground at Rajpur. *Saxena* 1314, 1885. Fl. March-Sept. Fr. Sept.-Oct.

Lathyrus aphaca L.

Occasional on Kamptee Road; frequent in fields below Bhatta Dhobighat. *Saxena* 347, 1671. Fl. & Fr. Feb.-May.

Melilotus indica All.

Occasional along waysides and drains at Rajpur, ascending to 1220 m. *Saxena* 277, 1683(B), D.D. No. 138640. Fl. & Fr. Nov.-April.

Pueraria phaseoloides (Roxb.) Benth.

Rajpur, frequent in sal forest. *Saxena* 2205. Fl. Aug.-Sept. Fr. Sept.

Rhynchosia falconeri Baker

Occasional, in open places at Kamptee, Murray's Spring, near Cloud End and in the grasslands of Benog. *Saxena* 1193, 1282, 1505. Fl. Aug.-Sept. Fr. Oct.-Nov.

Shutteria densiflora Benth.

Occasional at Rajpur. *Saxena* 1595 Fl. Oct.-Nov. Fr. Dec.

Smithia conferta Sm.

Rajpur, common in moist places near sal forest. *Saxena* 2299(B).
Fl. Sept.-Oct. Fr. Oct.-Nov.

Smithia sensitiva Ait.

Rajpur, sal forest in somewhat moist situations. *Saxena* 1580, 2299(A).
Fl. Sept.-Oct. Fr. Dec.

Trigonella corniculata L.

Rajpur, occasional along roadsides in waste lands. *Saxena* 1753.
Fl. March-April. Fr. April-June.

Trigonella polycerata L.

Along roadsides at Rajpur. As a weed in wheat fields at Kamptee.
Saxena 1756, 1841. Fl. & Fr. March-May.

Uraria rufescens (DC.) Schind.

Occasional in sal forest, Rajpur. *Saxena* 2303. Fl. Aug.-Sept. Fr.
Sept.-Oct.

CAESALPINACEAE

Cassia laevigata Willd.

Occasional along fields below Bhatta-Dhobighat and also near
Bhatta Toll Bar. *Saxena* 850, 1378. Fl. July-Sept. Fr. Oct.-Dec.

Cassia pumila Lamk.

Frequent along waysides, in open places near Kamptee Rest House.
Saxena 1203. Fl. July-Aug. Fr. Sept.-Oct.

ROSACEAE

Rubus foliolosus D. Don.

Occasional on the way to Park Gate and Barlowganj. *Saxena* 632,
906. Fl. & Fr. April-Sept.

Loc. name: *Anchu*

COMBRETACEAE

Combretum roxburghii Spreng.

Occasional at Rajpur. *Saxena* 2343. Fl. Nov.-Dec.

Terminalia bellirica Roxb.

Rare on the Bridle Path above Rajpur up to 1050 m. and in sal
forest. *Saxena* 1788. Fl. April-May. Fr. Dec.-Feb.

MYRTACEAE

Syzygium cerasoides (Roxb.) Chatt. et Kanj.

Occasional in sal forest, Rajpur. *Saxena* 1913. Fl. April-May.

Loc. name: *Piyanam*

Syzygium cumini (L.) Skeels.

Frequent in sal forest and often cultivated at Rajpur. *Saxena* 530, 1887. Fl. April-May. Fr. June-July.

LYTHRACEAE

Ammannia baccifera L.

Kamptee Fall, in wet rice fields. *Saxena* 1548, 2247. Fl. & Fr. Sept.-Nov.

Ammannia multiflora Roxb.

Kamptee Fall, abundant in wet rice fields. *Saxena* 1546, 2099. Fl. & Fr. July-Nov.

Rotala mexicana Cham. & Schlecht.

Gregarious in open moist spots near sal forest, Rajpur. *Saxena* 2293. Fl. & Fr. Late Sept.-Oct.

Rotala rotundifolia (Buch.-Ham.) Koehne.

Abundant in and around water ditches near sal forest, Rajpur. Aquatic or in marshy places. *Saxena* 1634, 2091. Fl. Feb.-March.

CUCURBITACEAE

Bryonopsis laciniosa (L.) Naud. var. *laciniosa*.

Occasional in waste places at Rajpur. *Saxena* 1286. Fl. & Fr. Sept.-Oct.

Cucumis sativus L.

Common at Rajpur, ascending to 1200 m. Occasional at Kamptee Fall and Charleville. *Saxena* 1032, 1396, 2139. Fl. Aug.-Sept. Fr. Oct.

Except fruits, which are very bitter in taste, *C. hardwickii* Royle is similar in all essential characters to *C. sativus* L. The two species are now considered conspecific. It is the (bitter) form *C. hardwickii* which occurs wild in the area.

CACTACEAE

Opuntia monacantha Haw.

Occasional in dry waste lands at Rajpur; rare at Jharipani. *Saxena* 1918. Fl. April-May.

Loc. name: *Soru*

UMBELLIFERAE

Bunium persicum (Boiss.) Fedt.

Occasional along roadsides near Kinraig and Barlowganj. *Saxena* D. D. No. 139182. Fl. Nov.

Trachyspermum ammi (L.) Sprague.

Rare, near Jabarkhet. *Saxena* 1365. Fl. Sept.-Oct.

RUBIACEAE

Adina cordifolia (Roxb.) Hook f.

Occasional in sal forest, Rajpur. *Saxena* 1628. Fl. June-July. Fr. Cold season.

Loc. name: *Haldu*

Galium vestitum D. Don.

Along waysides, 1500-2200 m. Kamptee, Arnigarh, Landour, Benog etc. *Saxena* D. D. No. 138334. Fl. & Fr. Aug.-Oct.

Hedyotis pinifolia Wall. ex G. Don.

Occasional in somewhat moist and grassy places in and near sal forest, Rajpur. *Saxena* 1438(B), 2308, 2337. Fl. & Fr. Sept.-Oct.

Knoxia sumatrensis (Retz.) DC.

Rajpur, occasional in sal forest. *Saxena* 2097, 2306. Fl. Aug.-Sept. Fr. Sept.-Oct.

Oldenlandia diffusa (Willd.) Roxb.

Rajpur, in moist and grassy places near sal forest. *Saxena* 2084. Fl. & Fr. July-Sept.

Randia dumetorum Lamk.

Occasional in open places at Rajpur, Kutal village etc. *Saxena* 1900. Fl. April-June. Fr. Cold season.

Loc. name: *Maidal*

COMPOSITAE

Ageratum houstonianum Mill.

Common in waste places at Rajpur, Jharipani etc. *Saxena* 201. Fl. & Fr. Nov.-March.

Artemisia vulgaris L.

Common along waysides and in forest. Jabarkhet Road, Kamptee Road, Benog, Murray's Spring Forest etc. *Saxena* 1186. Fl. & Fr. Aug.-Oct.

Loc. name: *Chhamra* (Samri)

Blainvillea acmella (L.) Philipson

Common in fields at Rajpur. Occasionally ascending to 1200 m., near Katta Patthar. *Saxena* 1325, 1453, 2171. Fl. & Fr. Aug.-Nov.

Blumea mollis (D. Don) Merr.

Frequent along waysides and in waste lands, 915-1300 m. Rajpur, Ramtirth Ashram, Bridle Path etc. *Saxena* 563, 1726. Fl. & Fr. March-June.

Blumea laciniata (Roxb.) DC.

Occasional along waysides in somewhat dry places, 915-1500 m. Rajpur, Kutal Gate, Bhatta Fall etc. *Saxena* 591, 1817, 1882. Fl. & Fr. March-May.

Centipeda minima (L.) A. Br. & Aschers.

Bridle Path (1500 m.), rare in dry places. *Saxena* 1452. Fl. & Fr. June-Nov.

Cnicus argyranthus (DC.) C.B.Cl.

Common in waste lands at Barlowganj. *Saxena* 577. Fl. & Fr. Late May-Sept.

Elephantopus scaber L.

Rajpur, rare in sal forest. *Saxena* 2300. Fl. Oct.

Erigeron annuus Pers.

Common and often gregarious in open or somewhat shady places, 1500-2000 m. Camels Back Cemetery, Barlowganj, Kamptee Road, Municipal Garden, near Mossy Fall, way to Murray's Spring etc. Fairly naturalized. *Saxena* 358, 667, 692. Fl. April-Aug. It is a native of America.

Eupatorium adenophorum Spreng.

Fairly common along stream below Bhatta-Dhobighat. Also found at Katta Patthar, Jharipani etc. *Saxena* 424. Fl. & Fr. March-July.

Eupatorium riparium Regel.

Occasional along stream at Bhatta Fall (1450 m.), apparently wild. *Saxena* 1668, 1820(B). Fl. & Fr. March-April. A native of Mexico and West Indies.

Gnaphalium purpureum L.

Occasional along waysides in open or shady places. Cloud End, near Birla Niwas etc. *Saxena* 1391, 1473. Fl. & Fr. Sept.-Nov.

Laggera falcata O. Ktze.

Common on hill-sides at Rajpur especially near sal forest. *Saxena* 1435, 1581. Fl. & Fr. Oct.-Dec.

Laggera pterodonta Sch.-Bip.

Occasional in waste lands at Rajpur. Along stream in moist and somewhat sheltered places near Kutalgaon. *Saxena* 185, 1733. Fl. & Fr. Jan.-April.

Prenanthes violaefolia Dcne.

Rare in sheltered places on the way to Benog, Dhobighat, Charleville Road etc. *Saxena* 1509. Fl. & Fr. Oct.-Nov.

Wedelia wallichii Less.

Rare, in forest undergrowth at Kamptee Fall. *Saxena* 2141. Fl. & Fr. Aug.-Sept.

CAMPANULACEAE

Campanula canescens Wall. ex DC.

Occasional in open places at Bhatta Fall, Kamptee Fall etc. *Saxena* 1670. Fl. March. Fr. April-May.

Cephalostigma hirsutum Edgew.

On open grassy slopes in Murray's Spring Forest and near Bhatta Fall. *Saxena* 1384, 2556. Fl. & Fr. Sept.-Oct.

Lobelia alsinoides Lamk.

Somewhat gregarious in open moist places near sal forest, Rajpur. *Saxena* 2294. Fl. & Fr. Sept.-Nov.

Lobelia heyneana R. & S.

In moist places at Kamptee Fall. In sheltered, stony ground above Kutal village (1150 m.). *Saxena* 1541, 2231. Fl. & Fr. Sept.-Nov.

Wahlenbergia gracilis Schrad.

In somewhat moist grassy slopes in the clearings in sal forest, Rajpur. *Saxena* 1172. Fl. & Fr. March-June.

MYRSINACEAE

Ardisia solanacea Roxb.

Along shady ravines in sal forest at Rajpur. *Saxena* 1767. Fl. May-June. Fr. Feb.-April.

OLEACEAE

Jasminum multiflorum Andre.

Occasional in open places at Rajpur. *Saxena* 194, 370. Fl. Dec.-April.

APOCYNACEAE

***Ichnocarpus frutescens* R.Br.**

Occasional at Rajpur, often in sal forest. *Saxena* 1440, 2331. Fl. Sept.-Nov.

ASCLEPIADACEAE

***Cynanchum glaucum* Wall.**

Along wayside in open places on the way from Hathipaon to Cloud End. *Saxena* 2056. Fl. June-Aug.

***Periploca calophylla* Falc.**

Climbing on trees in shady forest; usually in shady ravines. Kamptee Fall, Bhatta Fall, Arnigarh, Barlowganj etc. *Saxena* 1715, 1848. Fl. April-May. Fr. Cold season.

***Tylophora himalaica* Hook f.**

Frequent in somewhat shady places at Kamptee Fall. *Saxena* 2023. Fl. July-Aug.

GENTIANACEAE

***Canscora decussata* R. & S.**

Rare, along roadsides near sal forest, Rajpur. *Saxena* 1431. Fl. & Fr. Oct.-Nov.

***Canscora diffusa* R.Br.**

Occasional in open places at Rajpur, ascending to 1100 m. on the Bridle Path. *Saxena* 190, 1430. Fl. & Fr. Oct.-Nov.

***Hoppea dichotoma* Willd.**

Gregarious in open grassy places at Bhatta Fall and near sal forest, Rajpur. *Saxena* 1382, 2289. Fl. & Fr. Late Sept.-Oct.

BORAGINACEAE

***Bothriospermum tenellum* (Horn.) Fisch. & Mey.**

Kamptee Fall, in fields in moist spots. *Saxena* 1712. Fl. March-April. Fr. April.

CONVOLVULACEAE

***Ipomoea cairica* (L.) Sweet.**

Commonly grown for ornamental purposes and naturalized at many places at Rajpur, along waysides in thickets, over hedges etc. *Saxena* 407. Fl. Most parts of the year.

Ipomoea muricata (L.) Jacq.

Occasional along waysides, over shrubs and in thickets at Rajpur, Kutalgaon, up to 1000 m. *Saxena* 2222. Fl. Aug.-Sept. Fr. Sept.-Nov.

Volvulopsis nummularia (L.) Roberty

Rajpur, in open sunny places near sal forest. *Saxena* 2355. Fl. Sept.-Oct. Fr. Oct.-Nov.

SOLANACEAE

Cestrum parquill 'Her.

Fairly common in open waste lands, south of Mussoorie, 1500-2000 m., Jharipani, Barlowganj, near Masonic Lodge etc. Completely naturalized. *Saxena* 578. Fl. April-July (but remains flowering in most parts of the year). Fr. July.

Datura tatula L. var. tatula.

Occasional in waste lands at Rajpur. *Saxena* 2168. Fl. April-Aug. Fr. June-Sept.

SCROPHULARIACEAE

Antirrhinum orontium L.

Occasional along waysides in waste lands, 915-2100 m., Rajpur-Jabar-khet Road etc. *Saxena* 387, 1720. Fl. & Fr. Feb.-July.

Centranthera nepalensis D.Don.

In open grassy places near sal forest, Rajpur. *Saxena* 2319. Fl. & Fr. July-Oct.

Limpophila rugosa (Roth) Merr.

Along water ditches near sal forest, Rajpur. *Saxena* 2324. Fl. Sept.-Oct. Fr. Oct.-Nov.

Lindernia hookeri subsp. kumaunensis Pennell

Abundant in open grassy places near sal forest, Rajpur. *Saxena* 2315. Fl. & Fr. Sept.-Oct.

Lindernia pyxidaria All.

Somewhat gregarious in wet rice fields at Kamptee Fall. *Saxena* 2248. Fl. & Fr. Late Aug.-early Oct.

Lindernia sessiliflora (Benth.) Wettst.

Frequent in moist spots in harvested field at Kamptee Fall; occasional on moist hill-sides, 1000-1600 m.; Cloud End, Barlowganj etc. *Saxena* 1392, 1515, 2251. Fl. Aug.-Sept. Fr. Sept.-Nov.

Mella hamiltoniana (Benth.) Pennell

Rare in open grassy places near sal forest, Rajpur. *Saxena* 2312. Fl. Sept.

Scoparia dulcis L.

Common along roadsides in waste lands at Rajpur. *Saxena* 1058, 1302. Fl. July-Sept. Fr. Sept.-Nov.

Verbascum chinense Sant.

Rajpur, in stony waste lands. *Saxena* 2087. Fl. & Fr. June-Aug.

Veronica biloba L.

Kamptee (1500 m.), rare, in dry places. *Saxena* 1843. Fl. & Fr. March-April.

Veronica javanica Bl.

Rare, along stream in moist situations at Bhatta Fall. *Saxena* 604, 1816. Fl. & Fr. March-May.

LENTIBULARIACEAE

Utricularia pubescens Sm.

Rajpur, near sal forest in open marshy places among grass. *Saxena* 2327 (A). Fl. & Fr. Late Sept.-Oct.

This interesting species was hitherto known only from tropical Africa and South America and is recorded from India for the first time.

Utricularia striatula Seem

Gregarious on moist walls among mosses; Half-way-House, Charleville Road etc. Also found on steep marshy slopes in sal forest, Rajpur. *Saxena* 1734, 2196. Fl. & Fr. Aug.-Oct.

PEDALIACEAE

Martynia annua L.

Occasional, in waste lands, on refuse dumps at Rajpur. *Saxena* 1020, 1284. Fl. Aug.-Sept. Fr. Oct.

ACANTHACEAE

Lepidagathis purpuricaulis Nees.

Occasional along wayside at Katta Patthar. *Saxena* 290. Fl. Feb.-April. Fr. April-May.

Perilepta edgeworthiana (Nees) Brem.

Rajpur along Motor Road in sal forest. *Saxena* 1584, 2346. Fl. Oct.-Nov.

Phlogacanthus thyrsoflorus (Roxb.) Nees.

Rare, above Kutal Gate (1000 m.) along a field. *Saxena* 1741. Fl. Feb.-April. Fr. Late March-May.

VERBENACEAE

Clerodendrum viscosum Vent.

In waste lands at Rajpur. *Saxena* 243, 400. Fl. March-April. Fr. May-July.

Loc. name: *Karu* or *Karhu*

LABIATAE

Acrocephalus indicus (Burm. f.) O. Ktze.

Common in somewhat moist situations at Rajpur and Kamptee Fall. *Saxena* 1046, 1315, 2207. Fl. Aug.-Sept. Fr. Oct.

Ajuga macrosperma Wall. ex Benth. var. *macrosperma*.

Occasional near streams in moist and shady places at Bhatta Fall (1500 m.), Kuta¹ village etc. *Saxena* 284, 1666, 1738, 1823 (A). Fl. Feb.-April. Fr. April-May.

Elsholtzia pilosa (Benth.) Benth.

Common along waysides in somewhat moist situation at Depot, Jabarkhet Road etc. *Saxena* 1339, 2278. Fl. Sept.-Oct. Fr. Oct.

Elsholtzia stachyodes (Link). Raizada & Saxena comb. nov.; *Hyptis stachyodes* Link, Enum. 2:106, 1822.

Along wayside in open or shady places near Polo ground, Charleville, and on the way to Murray's Spring. *Saxena* 1332, 1529. Fl. Sept.-Oct. Fr. Oct.-Nov.

Leucas mollissima Wall. var. *scaberula* Hk.f.

Frequent in somewhat moist and shady places near or inside sal forest, Rajpur. *Saxena* 2080. Fl. July-Aug. Fr. Aug.-Sept.

AMARANTHACEAE

Alternanthera paronychioides St. Hil.

Fairly common; carpeted along roadsides at Rajpur (950 m). *Saxena* 1968. Fl. & Fr. All the year round.

Amaranthus chlorostachys Willd.

An erect herb, about 30 cm. high. Leaves long-petiolate ovate acute or obtuse. Flowers greenish, unisexual, monoecious, in short axillary spikes. Bracts slightly exceeding the tepals. Tepals 5, unequal. Stamens 5. Styles 4, papillose,

Occasional in waste places at Barlowganj. *Saxena* 574. Fl. May-June.

The specimen quoted above was identified by van Ooststroom, Rijksherbarium, Leiden. This species is apparently new to India.

Amaranthus lividus L.

A procumbent herb; stem often pinkish. Leaves long-petiolate, ovate, ovate-oblong, rhomboid-ovate, with broadish usually deeply emarginate apex. Flowers greenish or occasionally pinkish, unisexual, monoecious, in axillary clusters or forming terminal and axillary spikes; bracts and bracteoles much shorter than the perianth. Tepals 3, exceptionally 4. Stamens 3; filaments much shorter than the perianth. Styles 2(-3) Utricle smooth or faintly rugulose when ripe, slightly exceeding the perianth.

Frequent in waste lands and often along drains at Rajpur, occasionally along stream at Bhatta-Dhobighat and Bhilaru. *Saxena* 758, 1027, 1371, 1752. Fl. & Fr. March-Oct.

The species described above is var. *ascendens* Thell. the specimen (*Saxena* 758) was also identified by van Ooststroom, Rijksherbarium, Leiden. This variety is a new record for India.

Gomphrena celosioides Mart.

Along roadsides at Rajpur (950 m.). *Saxena* 814. Fl. & Fr. all the year round.

POLYGONACEAE

Polygonum mite Schrank.

Occasional along streams at Rajpur, Arnigarh etc. *Saxena* 1606, 1988. Fl. & Fr. June-Dec.

PIPERACEAE

Piper longum L.

Occasional at Rajpur (950 m.). *Saxena* 1033. Fl. Aug.-Sept.

LORANTHACEAE

Scurrula cordifolia (Wall.) D. Don.

Occasional at Rajpur. Found on *Woodfordia fruticosa*, *Acacia catechu*, *Mangifera indica* etc. *Saxena* 2105. Fl. Cold season.

Scurrula elata (Edgew.) Danser.

Frequent on *Persea duthiei*, *Ulmus pumila*, *Populus ciliata* and *Cornus macrophylla* at Municipal Garden Road. *Saxena* 731, 2051. Fl. & Fr. June-July

Scurrula pulverulenta (Wall.) G. Don.

Frequent at Rajpur (Bridle Path) ascending to 1100 m. Found on *Mallotus philippensis*, *Toona ciliata*, *Punica granatum*, *Lannea coromandelica* etc. *Saxena* 1451, 2175. Fl. Oct.-Dec.

Loc. name: *Banda*

EUPHORBIACEAE

Baliospermum montanum (Willd.) Muell.-Arg.

Occasional in waste grounds or along fields at Rajpur and Katalgaon. *Saxena* 275, 412, 1740. Fl. & Fr. Mainly March-April.

Euphorbia prostrata Ait.

Frequent along waysides and drains at Rajpur, Kinraig etc. *Saxena* 388, 740. Fl. & Fr. Throughout the greater part of the year.

Sapium sebiferum Roxb.

Frequently found in sal forest, Rajpur. *Saxena* 1914. Fl. April-May.

Loc. name: *Panchchirukh, Gutel, Tarcharbi*

URTICACEAE

Elatostema ficoides Wedd.

Rare in damp, sheltered spots at Mossy Fall. *Saxena* 3073, 2163. Fl. July-Aug.

A very interesting type of anthesis in the male flowers has been noted in the field. During anthesis the anthers detach from the centre one by one with a jerk and blow out a puff of white pollen grains; the filaments now remain free and curled in the flower with intact empty anthers. Of a receptacle, it is in only one or two flowers that a single stamen shows this process of dehiscence at a time but one after the other, with an interval of a few seconds, it takes place in every stamen of every flower of a receptacle.

Elatostema surculosum Wight.

Occasional in moist and shady places, usually on steep ground; Rajpur, Bridle Path etc.

Fleurya interrupta (L.) Gaud.

Occasional in waste lands at Rajpur. *Saxena* 1291, 2313. Fl. & Fr. Sept.-Oct.

Maoutia puya Wedd.

Abundant over a considerable area on steep, shady, hill-side near Ramtirth Ashram (Rajpur). *Saxena* 2102. Fl. June-Oct. Fr. Nov.-Jan.

Parietaria debilis Forst.

Rare, in shady places ; Kulri, Landour etc. *Saxena* D. D. No. 139695, 139697. Fl. & Fr. Sept.-Nov.

MORACEAE

Cudrania javanensis Trec.

Occasional at Rajpur (near sal forest, Kutal Gate etc.). *Saxena* 1723, 2347. Fl. April-June. Fr. Aug.-Nov.

Ficus hispida L.f.

Rare, at Rajpur. *Saxena* 521, 1758. Fl. & Fr. April-June.

ULMACEAE

Ulmus pumila L.

Rare, at Vincent Hill Road, Municipal Garden Road etc. *Saxena* D. D. No. 139694. Fl. Feb.-March. Fr. April-May.

SALICACEAE

Salix acmophylla Boiss.

Frequently found along water courses, Rajpur, Bhatta Fall etc. *Saxena* 1630, 1664, 1665. Fl. & Fr. March-May.

Loc. name: *Sinsaru, Ruins*

LILIACEAE

Notholirion macrophyllum Boiss.

Rare, near Bhatta Fall, 1400 m., in open stony spots. *Saxena* 1662. Fl. March.

ERIOCAULACEAE

Eriocaulon quinquangulare L.

Rajpur, abundant in open, grassy, moist places near sal forest. *Saxena* 2189. Fl. Sept.

CYPERACEAE

Cyperus compressus L.

Frequent in waste lands at Rajpur. *Saxena* 1028. Fl. Aug.-Sept.

Kyllinga monocephala Rottb.

Rajpur, common in waste ground. *Saxena* 833. Fl. July-Aug.

Kyllinga triceps Rottb.

Rajpur, occasional in open grassy places. *Saxena* 839. Fl. July-Aug.

Lipocarpa argentea R.Br.

Occasional in open, grassy, moist places near sal forest, Rajpur. *Saxena* 2190. Fl. Sept.-Oct.

GRAMINEAE

Bothriochloa pertusa A. Camus.

Common between 900-1800 m. Rajpur, Bridle Path, Bhatta Fall etc. *Saxena* 372, 560, 1016. Fl. & Fr. Feb.-Sept.

Bromus tectorum L.

Lal Tibba 2250 m. *Saxena* 642. Fl. & Fr. April-June.

Cymbopogon martinii (Roxb.) Wats.

Near Barlowganj. *Saxena* 1559. Fl. Oct.-Jan.

Cynodon dactylon Pers.

Common in waste lands along roadsides at Rajpur, Kamptee Road (1800 m.). *Saxena* 658, 1007. Fl. May-June.

Cyrtococcum patens A. Camus.

Occasional, at Rajpur (1000 m.), Mossy Fall, Municipal Garden Road etc. *Saxena* 901, 1294. Fl. & Fr. July-Oct.

Dichanthium annulatum Stapf

Common, at Rajpur, Bridle Path, Bhatta-Dhobighat, near Kinraig etc. *Saxena* 382, 526, 562, 743, 1003. Fl. & Fr. Feb.-Sept.

Echinochloa colonum Link.

In waste lands at Kamptee. *Saxena* 1189(B). Fl. Aug.-Sept.

Iseilema laxum Hack.

Above Bhatta-Dhobighat, 1700 m. *Saxena* 746. Fl. June-July.

Phalaris minor Retz.

In and along wheat fields at Bhatta, Kamptee. *Saxena* 1679, 1739. Fl. March-May.

Setaria verticillata Beauv.

Rajpur, in waste lands. *Saxena* 1066. Fl. rains.

Vulpia myros Gmel.

Occasional at Lal Tibba (2100 m.). *Saxena* 458. Fl. March-April.

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